

Study of Thyroid Hormones for Vitiligo Patients in AL-Anbar Governorate

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Abstract

Vitiligo is a common acquired depigmentation disorder characterized by the loss of functional skin and mucosal melanocytes the reported incidence is 0.5% to 2% worldwide. Its pathogenesis is mostly considered autoimmune and this pigmentary disorder is strongly associated with autoimmune thyroid disorders. To evaluate the serum thyroid hormone in vitiligo patients of Al-Anbar governorate and to compare the results with other external studies. The study group included 80 patients with vitiligo, and 40 healthy volunteers. Blood thyroid hormone was determined using Monobind kits from reliable USA company. Their ages ranged from 1 to 70 years. Family history of vitiligo was positive in a percentage of (30%) of the patients. The mean levels of serum thyroid hormone (T3, T4) in patients with vitiligo were found to be no significant difference than those of healthy individuals. The TSH level in patients with vitiligo were found to be significantly higher than those of healthy individuals. This study strengthens the relationship between the thyroid hormones intake, formation, and metabolism with the pathogenesis of vitiligo. Therefore it is concluded that vitiligo patients should be evaluated for thyroid hormones.

Key Words: *Vitiligo, Thyroid hormone, Autoimmune thyroid, T3, T4, TSH.*

Introduction

Vitiligo is an acquired hypopigmentary skin disorder affecting the population of worlds without discrimination of race, age, gender and ethnic background(1). It is characterized by the formation of white patches and these patches associated with the loss of local melanocytes. Vitiligo involves the progressive loss of epidermal melanocytes and sometimes hair follicle melanocyte(2). Vitiligo is more significant in population of dark skinned individuals, due to its pigmentary disfigurement and has major impact on quality of life of patients(3). It produces social stigma in the affected individuals and is often confused with leprosy or other socially terrifying infectious diseases. It is a non-contagious disorder and the most commonly acquired hypomelanosis(4). The lesions in vitiligo patients are most commonly found on the body areas that are exposed to sun like hands, arms, faces, feet etc. . Patients suffering from vitiligo may have premature graying of the scalp hair and eyebrows along with the appearance of white patches on the skin. Vitiligo is linked with simultaneous occurrence of other autoimmune diseases as well as psychosocial difficulties

(5)(6)(7). In certain cultures, patients having vitiligo are regarded as social outcasts(3). Several reports have suggested associations between vitiligo and a variety of other autoimmune diseases, including thyroid conditions, alopecia areata, type 1 diabetes mellitus, pernicious anemia, and rheumatoid arthritis. Autoimmune thyroid diseases are common in patients with vitiligo(8). Studies have reported that the incidence of thyroid disease is 0-52% in patients with vitiligo, and that 3% to 90% of vitiligo patients have antithyroid antibodies(9)(10). Therefore, routine screening for thyroid dysfunction is recommended for patients with vitiligo(11).

Patients and Method

A total 80 patient with vitiligo were enrolled. Half number of healthy individuals with matching ages were included as controls. The samples were collected from the patients during their visiting to dermatological clinic of Dr. Abdullah salih Alhasan in Al-Anbar governorate. The ages of the patients ranging between 1-70 years old from both sexes. Many questions were asked to the patients about his name, age, accommodation, occupation, chronic diseases, family history, time of

infection, the presence of psychological disturbances, smoking, most common diet, most common drinks, spiritual questions (prayer), time of disease exacerbation, and the factors that exacerbate vitiligo to avoid the interferences with the other diseases, and to find a cause for this disease. All of patients and healthy individuals were not smokers, have no any chronic diseases, and not alcoholic drinkers. A total of (10 ml) of venous blood was drawn in sterile syringe and centrifuged to separate the serum and then stored at -45°C until begin used. The estimation of triiodothyronine (T3), thyroxine (T4), and thyroid-stimulating hormone (TSH) levels were done by using a Microplate Enzyme Immunoassay(12)(13)(14) from Monobind company (made in USA).

Results

The study included a total of 120 persons. Among them 80 had vitiligo (30 male and 50 female) and 40 were healthy controls (8 male and 32 female). Their ages ranged from 1 to 70 years . Family history of vitiligo was positive in a percentage of (30%) of the patients. The duration of disease ranged between 1 month to 20 years.

History of seasonal variation of disease was positive in (60%) patients. Out of these (10%) noticed exacerbation of disease in winter while (50%) in summer season. Bad emotional state exacerbates of about (70%) of vitiligo patients, while the other (30%) dose not affected. This study showed that there is no relationship between the occupation, accommodation, most common diet, most common drinks, and spiritual side and vitiligo. In the patient’s group T3 and T4 were not significant statistically than those in control group. while TSH was significantly higher than those in control group. The results are depicted in Table 1. The values are reported as mean \pm SD and 95% confidence interval. For statistical analysis between groups paired t test was used. Pearson test was used for correlation analysis. The levels of each marker were compared between the study groups and control group, using SPSS computer package. P values of ≤ 0.05 were considered significant. The table above shows that T3 and T4 are not significant difference between patients and controls($P \geq 0.05$). While TSH is significantly higher in patients in a comparison with controls ($P \leq 0.05$).

Table 1: the mean value ,S.D, t-value, and p-value of the parameters were tested.

No.	parameters	factor	Mean \pm SD	t- value	P-value
1	T3 ng/ml	patient	1.03 \pm 0.30	-0.429	0.669
		control	1.05 \pm 0.17		
2	T4 $\mu\text{g}/\text{dl}$	patient	7.69 \pm 1.86	0.000	1.000
		control	7.69 \pm 1.55		
3	TSH $\mu\text{IU}/\text{ml}$	patient	3.33 \pm 2.27	2.920	0.004
		control	2.23 \pm 0.96		

Discussion: Thyroid functional disorders and autoimmune thyroid diseases have been reported in association with vitiligo, and it seems that the incidence of clinical and subclinical thyroid involvement the incidence of clinical and subclinical thyroid involvement is more common in vitiligo patients than controls(15)(16) (17). Many researches about vitiligo and thyroid disease have been done with different results, one of these Mubki et al.,(2017)(18) showed that thyroid functional abnormalities were generally found more in vitiligo

patients were approximately 1.6 times more likely to have abnormal TSH than control. The mean TSH level was overall higher in the vitiligo group. Both high TSH and low TSH levels were seen more frequently in vitiligo patients. The vitiligo group had significantly higher prevalence (5%) of primary hypothyroidism (high TSH and low T4) as compared to the control group. Alissa et al.,(2011)(19) and Akay et al.,(2010)(20) showed the predominance of females among vitiligo patients can be attributed to the fact that females are more conscious

about their cosmetic appearance and thus more likely to seek medical attention. Vitiligo seems to be commonly associated with autoimmune diseases. Two studies have reported associated autoimmune disease in (19%) and (23%) of vitiligo patients(21)(22).

One of the most commonly reported associations is thyroid disease, especially Hashimoto's thyroiditis(23). The reported prevalence of thyroid disease in the literature ranged from (4%) to (21%) to even higher in other studies(22)(24)(25).

Conclusions

From our results we conclude that a strong relationship is found between the thyroid hormones and the pathogenesis of vitiligo.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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